

Mill/Milk Water Viaduct Bat Dusk Emergence Survey and Otter Survey – extracts. Dated 16th May 2017

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1.2. [REDACTED] carried out a general ecology survey of the site in April 2016 and recommended further bat surveys prior to any masonry repairs to the viaduct.

1.3. Prior to the commencement of the works [REDACTED] commissioned a further bat and otter survey of the site to update the previous findings and to identify any current activity on the site. Due to the length of the structure it was decided the viaduct would be surveyed in two halves on two separate dates.

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2.3. The viaduct was thoroughly checked externally for potential bat roosting sites using a high powered torch and endoscope by looking for the following signs:-

- * Holes, cracks or crevices.
- * Bat droppings.
- * Prey remains.
- * Staining on external walls.

2.4. The daytime bat inspection survey and otter survey was immediately proceeded by a bat dusk emergence survey.

2.5. All survey work was carried out in line with Collins, J. (ed.) (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn)*.

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3.1.1. An internet desktop data search was carried out for records of protected species and protected sites within the survey area.

3.1.2. The internet data search showed recent records of otter approximately 1km south of the site within various locations along the Water of Milk, although no specific locations were provided. The data search also provided records of various species of bat including daubenton's bat, noctule bat and common pipistrelle bat within 2km of the site, the closest record is within Lockerbie, although no specific location were provided for the records.

3.1.3. The MAGIC website showed there are no designated sites within 1km of the surveyed area.

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3.2.2. A number of cracks and voids suitable for roosting bats were identified within the lower sections of brick and stone work. Due to the height of the structure the higher areas of the viaduct could not be safely inspected during this survey. No bat field signs were identified during this survey although a thorough inspection could not be undertaken during this survey.

3.2.3. Numerous mature and dead trees which contain characteristics suitable for roosting bats surround the viaduct. No bat field signs were identified within the lower sections of the trees although a thorough inspection of the larger trees could not be safely undertaken during this survey.

3.3.2. The weather at the time of the survey was clear, dry with a slight breeze. The wind speed remained at 10mph. A temperature of 10°C was recorded at 20:40pm, 10°C at 21:15pm and 9.5°C at 22:00pm.

3.3.3. The position of the surveyors and Anabat bat detectors during the survey is shown below. S=Surveyor and A=Anabat. Please note the blue box shows the surveyed section of the western side of the viaduct.

3.2.4. The survey area provides suitable bat foraging habitat although the works will be isolated to the structure and immediately surrounding vegetation and have no impact on the overall bat foraging and commuting habitat.

3.3. Dusk Emergence Bat Survey Results, 4th May 2017.

3.3.1. A dusk emergence bat survey of the western half of the viaduct, including the three western arches and piers was carried out by two surveyors. Each surveyor was equipped with a Batbox Duet bat detector and a two-way radio for communication. An additional two standalone Anabat bat detectors were also used on the site.



3.3.4. A brief outline of the findings from each of the surveyors is included below.

3.3.4.1. Surveyor 1.

21:06 to 21:59 – Approximately seven soprano pipistrelle bats were identified constantly foraging underneath the second western arch and above the watercourse. The bats were seen flying into the surveyed area from the west and exiting the surveyed area in a north westerly direction.

21:46 – A noctule bat was heard passing over the site but not seen.

3.3.4.2. Surveyor 2.

21:05 – A soprano pipistrelle bat was identified foraging between the 1st and 2nd western arches. The bats were seen flying into the surveyed area from the west and exiting the surveyed area in a north westerly direction.

21:07 to 21:41 – Approximately seven soprano pipistrelle bats were identified constantly foraging underneath the second western arch and above the watercourse. The bats were seen flying into the surveyed area from the west and exiting the surveyed area in a north westerly direction and above the watercourse flowing underneath the viaduct.

3.5.5. A brief outline of the findings from each of the Anabats is included below. A full copy of the recordings from the Anabats is included in Appendix III of this report.

3.5.5.1. Anabat 21.

Anabat 21 recorded one hundred and seventy two soprano pipistrelle bat calls between 21:06 and 22:00 and one noctule bat call at 21:47.

3.3.5.2. Anabat 18.

Anabat 18 recorded one hundred thirty one soprano pipistrelle calls throughout the survey between 21:06 and 21:41.

3.3.6. No bats were seen to emerge from the viaduct during this survey. The identified bats were seen foraging between the 1st and 2nd western arches and above the western side of the watercourse.

3.4. Dusk Emergence Bat Survey Results, 15th May 2017.

3.4.1. A dusk emergence bat survey of the eastern half of the viaduct, including the three eastern arches and piers was carried out by two surveyors. Each surveyor was equipped with a Batbox Duet bat detector and a two-way radio for communication. An additional two standalone Anabat bat detectors were also used on the site.

3.4.2. The weather at the time of the survey was dry with a moderate breeze at the start of the survey and light showers and moderate breeze from 9.40pm until the end of the survey. The wind speed remained between 10mph and increased up to 13mph at the end of the survey. A temperature of 14°C was recorded at 21:00pm, 14°C at 21:30pm and 13°C at 22:00pm. The surveyed structure is located within a sheltered valley; therefore the weather conditions within the central sections of the viaduct were not subjected to high levels of wind or rain during this survey.

3.4.3. The position of the surveyors and Anabat bat detectors during the survey is shown below. S=Surveyor and A=Anabat. Please note the blue box shows the surveyed section of the eastern side of the viaduct.



3.4.4. A brief outline of the findings from each of the surveyors is included below.

3.4.4.1. Surveyor 1.

21:07 – A soprano pipistrelle bat was identified foraging underneath the 2nd eastern arch. The bat was identified entering and exiting the surveyed area from the north east.

21:15 to 21:49 – Two soprano pipistrelle bats were constantly foraging underneath the 1st, 2nd eastern arches and above the watercourse. The bats were identified entering and exiting the surveyed from the north east.

3.4.4.2. *Surveyor 2.*

21:05 – A soprano pipistrelle bat was heard passing over the site but it was not seen.

21:24 – A soprano pipistrelle bat was identified foraging underneath the 2nd eastern arch. The bat was identified entering the surveyed area from the north east. The bat was not seen exiting the surveyed area.

21:31 – A soprano pipistrelle bat was identified foraging underneath the 1st eastern arch. The bat entered and exited the surveyed area from the north east.

21:35 to 21:59 – A soprano pipistrelle bat was identified constantly foraging underneath the 1st and 2nd eastern arch. The bat was identified entering the surveyed area from the north east but did not exit the surveyed area by the end of the survey.

3.3.5. A brief outline of the findings from each of the Anabats is included below. A full copy of the recordings from the Anabats is included in Appendix III of this report.

3.4.5.1. *Anabat 16.*

Anabat 16 recorded sixty six soprano pipistrelle bat calls between 21:07 and 21:58.

3.4.5.2. *Anabat 13.*

Anabat thirteen recorded sixty six soprano pipistrelle calls throughout the survey between 21:07 and 21:58.

3.4.6. No bats were seen to emerge from the viaduct during this survey. The identified bats were seen foraging between the 1st and 2nd eastern arches and above the eastern side of the watercourse.

4.1. The internet data search did not provide records of a known bat roost within the viaduct or in close proximity to the viaduct. The proposed works will have no potential impact on a known bat roost. The internet data search did provide records of otters located approximately 1km south of the site but no records of otter were provided within close proximity to the surveyed area.

4.3. Soprano pipistrelle bats and noctule bats were identified foraging and passing by during both dusk emergence surveys. No bats were identified as emerging from the structure during either dusk emergence survey; therefore the structure has been assessed as not being used by roosting bats. Any masonry repairs undertaken on the viaduct will not have an impact on roosting bats.

4.4. However, individual bats can seek refuge almost anywhere, therefore there is always potential for individual opportunistic bats to be present. Any works undertaken on any area of masonry along the viaduct will therefore have potential to impact on opportunistic bats during the Spring and Summer months.

4.5. A number of large mature trees and decaying trees which provide suitable habitat for roosting bats surround the viaduct. If the proposed works involves removing large limbs or felling any mature or decaying trees surrounding the viaduct there will be potential impact on roosting bats within the trees.

4.6. The proposed working area provides suitable habitat for foraging and commuting bats along the watercourse. The works will not cause fragmentation of any linear features and will not result in the loss of suitable bat foraging habitat. The proposed works will have no potential impact on foraging or commuting bats if suitable precautionary measures are adhered to.

5.3. It is recommended that any voids or cracks are checked for individual opportunistic bats using a high-powered torch. In the unlikely event that a bat is identified, all works must cease immediately, the bat protected from harm and professional advice sought.

5.4. It is recommended all mature and decaying trees located alongside the viaduct are not affected by the works. If any mature or decaying trees are to be affected, it is recommended climbing inspection surveys are undertaken by a bat licenced ecologist who holds a climbing certificate.

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Appendix II. BAT INFORMATION.

It is necessary to understand a little about bats, their basic nature, ecology and legal protection in order to evaluate the findings of this report.

18 species of bat currently reside in Britain, 17 of which are known to breed here. They are extremely difficult to identify in the hand and even more so in flight.

All appear to be diminishing in numbers, probably due to shortage of food, caused by pesticides, as insects are their sole diet, and habitat change.

As their diet consists solely of insects, bats hibernate during the winter when their food source is at its most scarce. They will spend the winter in hollow trees, caves, mines and the roofs of buildings.

Certain species, particularly the pipistrelle (the commonest and most widespread British bat) can quickly adapt to manmade structures and will readily use these to roost and to rear their young.

Bats are protected under the Wildlife and Countryside Act 1981, Regulation 41 of The Conservation of Habitats and Species Regulations 2010, and the Countryside & Rights of Way Act 2000.

It is an offence to intentionally or recklessly kill, injure or capture or disturb bats or to damage, destroy or obstruct access to any place used by bats for shelter or protection.

A breeding or resting site of any bat is known as a bat roost. A bat roost is therefore any structure a bat uses for shelter or protection. Because bats tend to use the same roosts each year, legal opinion is that the roost site is protected whether or not the bats are present at that time.

Bat roosts can be identified by looking for:-

- Suitable holes, cracks and crevices.
- Bat droppings.
- Prey remains.
- By carrying out night observations using a bat detector.

Where development proposals are likely to affect a bat roost site, a licence is required from Natural England.

The person applying for that licence has to be suitably qualified and experienced in bat matters. That person is then responsible for ensuring that the measures contained in the licence are carried out

Appendix III. ANABAT RECORDINGS.

4th May 2017 Dusk Emergence Survey.

Anabat 18.

Time	Noctule	Soprano Pipistrelle	Total
21	1	172	173
21:06		1	1
21:07		4	4
21:08		4	4
21:09		3	3
21:10		4	4
21:11		3	3
21:12		4	4
21:13		3	3
21:14		3	3
21:15		2	2
21:16		2	2
21:17		3	3
21:18		4	4
21:19		4	4
21:20		4	4
21:21		3	3
21:22		4	4
21:23		4	4
21:24		4	4
21:25		4	4
21:26		4	4
21:27		3	3
21:28		3	3
21:29		4	4
21:30		4	4
21:31		4	4
21:32		4	4
21:33		4	4
21:34		3	3
21:35		3	3
21:36		3	3
21:37		4	4
21:38		4	4
21:39		4	4
21:40		4	4
21:41		3	3
21:42		4	4
21:43		4	4
21:44		2	2
21:45		3	3
21:47	1	1	2
21:48		3	3
21:49		4	4
21:50		4	4

21:51		3	3
21:52		4	4
21:53		2	2
21:54		1	1
21:55		1	1
21:56		3	3
21:57		3	3
21:58		4	4
21:59		1	1
22		1	1
22:00		1	1
Total	1	173	174

Anabat 21.

Time	Soprano Pipistrelle	Total
21	131	131
21:06	1	1
21:07	4	4
21:08	4	4
21:09	3	3
21:10	4	4
21:11	4	4
21:12	4	4
21:13	4	4
21:14	3	3
21:15	3	3
21:16	1	1
21:17	2	2
21:18	4	4
21:19	4	4
21:20	4	4
21:21	5	5
21:22	4	4
21:23	4	4
21:24	5	5
21:25	5	5
21:26	4	4
21:27	3	3
21:28	4	4
21:29	3	3
21:30	4	4
21:31	4	4
21:32	4	4
21:33	4	4
21:34	4	4
21:35	3	3
21:36	4	4
21:37	4	4
21:38	3	3
21:39	4	4
21:40	4	4
21:41	3	3
Total	131	131



15th May 2017 Dusk Emergence Survey.

Anabat 16.

Time	Soprano Pipistrelle	Total
21:07	1	1
21:27	3	3
21:28	4	4
21:29	1	1
21:33	2	2
21:34	3	3
21:35	1	1
21:36	3	3
21:37	3	3
21:38	2	2
21:39	4	4
21:40	2	2
21:41	3	3
21:42	3	3
21:43	3	3
21:44	4	4
21:45	4	4
21:46	1	1
21:47	3	3
21:48	3	3
21:49	4	4
21:50	4	4
21:51	2	2
21:52	2	2
21:58	1	1
Total	66	66

Anabat 13.

Time	Soprano Pipistrelle	Total
21:07	1	1
21:08	3	3
21:11	1	1
21:12	1	1
21:13	1	1
21:16	1	1
21:20	1	1
21:23	2	2
21:25	1	1
21:27	2	2
21:28	1	1
21:29	2	2
21:30	2	2
21:34	1	1
21:35	1	1
21:36	2	2
21:42	1	1
21:45	1	1
21:46	2	2
21:47	2	2
21:48	1	1
21:49	1	1
Total	31	31

Toolbox Talk : Bats	
<p>18 species of bat have been recorded in Britain, 17 of which are known to breed here.</p> <p>Identification.</p> <p>Some species can be extremely difficult to identify in the hand and even more so in flight.</p> <p>Species such as the Brown Long Eared bat pictured above can be more easily identified in the hand. Whereas, the Common Pipistrelle and Soprano Pipistrelle are more difficult to identify.</p> <p>Bats are more easily identified by field signs such as droppings or feeding remains.</p>	
	<p>Habitat.</p> <p>Bats are highly specialised creatures and require a relatively narrow range of suitable conditions in order to sustain a viable population. Bats require an abundant supply of flying insect food in places where they can easily be caught and they need safe and reliable roosting sites, particularly during breeding and hibernation.</p> <p>Bats are heavily dependent on buildings and trees for their roost sites and therefore extremely susceptible to disturbance from human activities. Development schemes can also isolate bat populations and sever roost sites from favoured feeding areas by removing hedgerows or other features used as commuting routes.</p> <p>Bats are susceptible to disturbance and have been known to abandon roost sites after instances of disturbance. The effects of disturbance are more pronounced at different times of year. Serious disturbance during breeding can result in the breeding females being killed or the abandonment and subsequent starvation of dependent young. Repeated disturbance during winter hibernation can result in the death of adult animals from starvation.</p> <p>The level of protection afforded to bats in the UK and European legislation reflects the fact that it is now generally accepted that bats have declined substantially, maybe by as much as 80%, over recent years. Most species are declining and vulnerable with all species being protected.</p> <p>As their diet consists solely of insects, bats hibernate during the winter when their food source is at its most scarce. They will spend the winter in hollow trees, caves, mines and occasionally the roofs of buildings.</p> <p>Certain species, particularly Pipistrelle, can quickly adapt to manmade structures and will readily use these to roost and to rear their young.</p>
<p>Legislation.</p> <p>Bats and their roosts are fully protected at all times (whether the bats are currently present or not). This protection comes from the Wildlife & Countryside Act 1981 (updated by the Countryside Rights of Way Act 2000) and the Habitats Regulations 1994. Under this legislation it is an offence to intentionally or recklessly kill, injure, capture or disturb bats or to damage, destroy or obstruct access to any place used by bats for shelter or protection.</p> <p>Under the Habitats Regulations, where bats may be affected by development proposals, a licence is required from Natural England. Natural England's published guidelines on the licence procedure indicate that if, on the basis of survey information and specialist knowledge of the species concerned, the proposed activity is reasonably likely to result in an offence then a licence is required. If, on the other hand the proposed activity is reasonably unlikely to result in an offence, then a licence is not required.</p>	
<p>If bats or bat field signs are identified during works, stop all works and contact Whitcher Wildlife Ltd directly on 01226 753271 or at info@whitcher-wildlife.co.uk</p>	